

**Appendix I: Amendment of Claims****WHAT IS CLAIM IS:**

1. A phase-change memory device comprising:
  - a. a pair of electrodes; and
  - b. a resistive layer with a plurality of ultra-small resistive element, or
  - c. a lamination of said resistive layer and conductive layer.
2. The top surface and bottom surface of the said resistive elements in claim 1 contact directly with the top and bottom electrodes, respectively.
3. The device in claim 1 with lamination of resistive layer and conductive layer wherein the top surface and bottom surface contact with said adjacent conductor layer.
4. The device of claim 1 wherein the resistive layer has a thickness in the range of about 1.0 to 100 nm.
5. The device of claim 1 wherein the size of the resistive element is in the range of about 1.0-100 nm in diameter.
6. The device of claim 1 wherein the material of electrode layer and the conductive layer in the

lamination resistive element is selected from the high melting temperature metals, alloys and conductive compounds.

7. The programming of the device of claim **1** includes a pulse current of short duration and higher current and a pulse current with longer duration and lower current.
8. A programming metallization cell memory (PMCm) comprising:
  - a. a pair of electrodes; and
  - b. a thin metal layer; and
  - c. a single resistive layer with a plurality of ultra-small solid electrolyte resistive element, or
  - d. a lamination of said resistive layer, thin metal layer and conductive layer.
9. The top surface and bottom surface of the said solid electrolyte resistive elements in the claim **8** contact directly with the adjacent metal layer and bottom electrode, respectively.
10. The device of claim **8** with lamination of resistive layer, thin metal layer and conductive layer wherein the top surface and bottom surface of said solid electrolyte element contact with adjacent said conductor layer and thin metal layer.

11. The device of claim **8** wherein the size of the solid electrolyte resistive element is in the range of about 1.0-100 nm in diameter.